

PATENT SPECIFICATION (11)

1 548 588

(21) Application No. 21092/76 (22) Filed 21 May 1976 (19)

(23) Complete Specification filed 7 July 1977

(44) Complete Specification published 18 July 1979

(51) INT. CL.² B42D 15/00

(52) Index at acceptance

B6A GA

G2X 2

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(54) SECURITY DOCUMENTS

(71) We, THOMAS DE LA RUE AND COMPANY LIMITED, a British Company of De la Rue House, 3/5 Burlington Gardens, London, W1, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:

This invention relates to improved security documents of the type used for identification purposes and to the production thereof. More particularly it relates to personal identification documents in card form.

Identity cards exist in many forms of construction and exhibit varying degrees of security against fraudulent alteration or misuse.

This invention provides identity cards possessing a high degree of security and an efficient system for the mass production of large numbers of individual cards, such as are required for National identity systems.

In the Specification the expression "a pattern as herein defined" means the type of printed pattern which is well-known as the background or banknotes and other security documents; these backgrounds or tints are normally distinct from the main part of the printing on a security document, for example, the main printing on a banknote may comprise the name of the issuing authority, the value of the banknote, numbers and a picture or portrait relating to the country concerned. The pattern may, for example, take the form of wavy lines or miniature or micro-characters such as letters and/or numbers, in all cases however, the said pattern creates a subdued overall tonal effect, over the area it occupies, when viewed from an average viewing distance, its specific detail is capable of being seen on close inspection. The pattern may be in one or in a number of colours; the colour of one or more portions of the pattern may change progressively in the manner of the so-called "rainbow printing". These patterns are ap-

plied by the letter-press, litho or any other suitable process.

According to one aspect of this invention, a process for producing a plurality of identity documents comprises the steps of printing a pattern (as herein defined) upon one surface of web material, applying a light-sensitive photographically developable coating to the printed surface of the web and overlying at least a part of the pattern, photographically exposing the coating to a succession of identity-imparting images discretely disposed one to another along the length of the web and overlapping at least a part of the pattern, developing and fixing the images and finally severing the web to produce the said plurality of documents.

The web material is preferably photographic base paper, for example, either barytes-coated card or polyethylene-coated card both of which are well-known base stocks for the photographic industry and the light sensitive coating is applied after printing, under the conditions necessarily used for such a process.

The background printing may be applied over the whole of one or both surfaces of the web or may be applied merely to or within the boundaries of areas of the web which correspond with the sizes of individual identity cards.

When polyethylene-coated base paper is used it is preferably, according to conventional practice, subjected to a corona discharge and coated with a very thin layer of gelatin and the background pattern is printed upon the gelatin layer.

In all instances, the photographic emulsion is preferably protected by a scratch-protecting layer of gelatin and the application of this layer forms an optional additional process step.

According to a second aspect of this invention a process for producing a plurality of identity documents comprises the steps of assembling sets of identity-imparting information corresponding in number to the said plurality of documents, exposing a photo-

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graphic film in web form to the sets of information so as to record the images upon the web and discretely disposed one to another along its length, processing the film to produce a single photographic web negative comprising all of the sets of information, exposing the light-activatable surface of a web of material comprising a printed pattern (as herein defined) beneath a light-sensitive photographically developable coating to the images of the web negative thereby to record the images of the negatives upon the web and discretely disposed one to another along its length, developing and fixing the image and severing the web to produce said plurality of documents.

The sets of identity-imparting information may be of any kind, for example, textual identifying information comprising words, letters, figures or numbers, or any combination thereof and/or one or more of the signature, fingerprint or portrait, most conveniently a photographic portrait, of the person to whom the card is to be issued.

When the printing on the web is in areas corresponding to the sizes of individual identity cards, each exposure of an information-bearing negative must be so accomplished that the information is recorded in required register with a printed area of the web. This may be done by printed register marks on the web and using mark-sensor devices to ensure correct register.

By providing webs of suitable width, two or more sets of personalizing information may be exposed simultaneously to produce a corresponding plurality of information formats disposed transversely across the web.

Examples of certain products and processes within the scope of this invention will now be described with reference to the drawings accompanying the Provisional Application of which Figure 1 is a flow chart which outlines one convenient set of apparatus and process steps and Figures 2 and 3 are highly enlarged fragmented and diagrammatic cross-sections of two different forms of identity card.

Referring first to Figure 1, personalizing information for a plurality of persons and comprising the name, address and photograph of each person is first brought together in a form suitable for photographing by a camera (Step A). Conveniently a record card is produced for each person. The camera is supplied with roll film and the personalizing information is recorded stepwise in frames disposed seriatim along the length of the film. We have found 1 frame perforated 35 mm film particularly convenient. After exposure the film is processed at Step B to produce negatives of the sets of combined personalizing information.

Prior to the commencement of Step A photobase paper in web form is printed on

one or both sides, as desired, with a fine-line security tint pattern at Step C, the printing comprises either areas of print each corresponding to the format of one identity card and spaced from each other across and along the length of the web or continuous printing along the length of the web. At Step D the whole of the printed side or one of the printed sides of the web is provided with a photoemulsion coating and at Step E the web is slit longitudinally into single-format width webs. At Step F the negative film from Step B is brought together with the printed emulsion-coated web material from Step E and the latter material leaves Step F after having been exposed to the negative in a photoprinter. If both sides of the web are coated with emulsion the web itself must be sufficiently opaque to prevent any significant light from passing therethrough. With such double-sided emulsion-coated web each surface may be exposed to a negative at Step F.

The photoprinted web from Step F is then processed at Step G, cut into single documents at Step H and the single documents are then converted at Step I into durable identity card form by being laminated between layers of protective plastics material.

All of the photographic steps, including the application of the photographic emulsion to the printed web must, of course, be conducted under suitable safe-light conditions.

When personalized information is required on both sides of an identity card we prefer to print at Step C information formats comprising alternately, along the length of the web, the security pattern required for the front of an identity card and the security pattern required for the back of the card (the security pattern being the same or different), coating the whole of the printed side of the web with a photographic emulsion and exposing one of a pair of adjacent formats to a negative carrying the information required on the front of the card and the other to a negative carrying the information required on the back of the card. The adjacent formats are subsequently cut as a pair and folded along their centre line for laminating layers. An adhesive may be used to bond the non-printed sides of the folded sheets together; a suitable adhesive may be applied to the reverse side of the web either before or after the printing Step C.

It is also within the scope of this invention to produce, by the folding technique above mentioned, identity cards with personalized information on one side only. In such an instance, the security pattern may be the same along the web or may alternate between blocks of one security pattern required for the front of the card and blocks of another tint required for the back of the card, and the exposures are timed in rela-

tion to relative movement between the web and the negative film so that only one set of personalized information is provided on each card.

5 Referring now to Figures 2 and 3 the outer layers 1 are two-component protective plastics material sheets applied at Step 1 to encapsulate, by a laminating process, the information-bearing part of the identity cards. The outer component of the layer 1
10 comprises a polyester resin and the inner component comprises a thermoplastic adhesive. A suitable two-part layer is described in U.S. Patent Specification No. Re. 25005
15 wherein the outer component is formed of polyethylene glycol ester of terephthalic acid and the inner component is polyethylene.

In Figure 2, the layer 2 is photographic paperboard base coated on one side with a
20 barytes layer 3. Security print, applied at Step C is to be seen on the barytes layer at 4 and on the uncoated side of the base 2 at 5. On the printed barytes layer 3 is a layer of photographic emulsion 6 and above it is
25 a protective gelatine layer 7 (both applied at Step D) and the combined layers 6 and 7 bear the personalizing information applied at Step F.

A lacquer, not shown, may be provided
30 between layers 1 and 7 to enhance the bonding therebetween.

In Figure 3, the layer 8 is photographic paperboard base provided on both sides with
35 polyethylene layers 9 and 10; layer 9 carries a thick layer of gelatine 11 and layers 10 and 11 both carry security print, 12 and 13, respectively, applied at Step C.

Over the print 13 is a layer of photographic emulsion 14 and above it a protective
40 gelatine layer 15 (both applied at Step D) and the combined layers 14 and 15 bear the personalizing information applied at Step F.

We prefer to use photographic paper having a base weight of between 200 and 300
45 gms/sq. metre but the invention is not limited to the use of such paper. We have found barytes coated card having a total base weight of 240 gms/sq. metre particularly
50 suitable and convenient. In the case of polyethylene coated card, particularly satisfactory identity cards have been produced from 180 gms/sq. metre based card extrusion coated on both sides with 35 gms/sq. metre of poly-
55 ethylene to produce a finished card with a total base weight of 250 gms/sq. metre.

Any suitable ink, i.e. an ink compatible with the surface to which it is to be applied may be used to print the security tint patterns. When polyethylene coated base paper
60 is used, a choice must be made from the various available inks which are specially adapted for printing on polyethylene or similar polymeric materials.

As an alternative to bringing all of the
65 personalizing information together on a re-

cord card and photographing the card to produce a negative, the textual information may be put on to a record card and the information thereon photographed together with the person to whom the information
70 relates, to produce a single negative, by a split-image camera.

It is within the scope of this invention to include within the resulting identity cards
75 additional security features, for example, but not exhaustively, machine readable marks of the optical or magnetic kinds

WHAT WE CLAIM IS:—

1. A process for producing a plurality
80 of identity documents comprising the steps of printing a pattern (as herein defined) upon one surface of web material, applying a light-sensitive photographically-developable coating to the printed surface of the web and
85 overlying the pattern, photographically exposing the coating to a succession of identity-imparting images discretely disposed one to another along the length of the web, and
90 overlapping at least a part of the pattern, developing and fixing the images and finally severing the web to produce the said plurality of documents.

2. A process as claimed in Claim 1 including the additional steps of printing a
95 second pattern on the other surface of the web material and applying a light-sensitive photographically-developable coating to the surface and overlying the second pattern, photographically exposing the coating upon
100 the other surface to a succession of identity-imparting images discretely disposed one to another along the length of the web which correspond positionally with the identity-
105 imparting images on the remote surface of the web, and developing and fixing the images on said other surface.

3. A process as claimed in Claim 1 including the additional step of printing a
110 pattern on the other surface of the web material.

4. A process as claimed in any one of the preceding claims in which the pattern is printed continuously along the length of the
115 web.

5. A process as claimed in any one of Claims 1 to 3 in which the pattern is printed in areas spaced from one another along the length of the web.

6. A process as claimed in any one of the preceding claims in which the web material comprises a polyethylene-coated base card and a layer of gelatine overlying the polyethylene and the pattern is printed upon
125 the gelatine layer.

7. A process as claimed in any one of Claims 1 to 5 in which the web material comprises a barytes coated base card and the pattern is printed upon the barytes
130 coating.

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8. A process as claimed in any one of the preceding claims including the additional step of applying a thin layer of gelatine upon the light-sensitive coating prior to photographically exposing the images.

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9. A process as claimed in Claim 1 in which a document comprises a pair of adjacent images relating to a single identity and comprising the additional step of folding the document about its mid point.

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10. A process as claimed in Claim 1 in which a document comprises one image and an un-imaged portion of the web of substantially the same dimension as the image along the length of the web and comprising the additional step of folding the document about its mid-point.

15
11. A process as claimed in either of Claims 9 and 10 in which the folded portions are secured together by means of an adhesive.

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12. A process for producing a plurality of identity documents comprising the steps of assembling sets of identity-imparting information corresponding in number to the said plurality of documents, exposing a photographic film in web form to the sets of information so as to record the images upon the web and discretely disposed one to

another along its length, processing the film to produce a single photographic web negative comprising all of the sets of information, exposing the light-activatable surface of a web of material comprising a printed pattern (as herein defined) beneath a light-sensitive photographically developable coating to the images of the web negative thereby to record the images of the negatives upon the web and discretely disposed one to another along its length, developing and fixing the images and severing the web to produce said plurality of documents.

13. An identity document manufactured by the process claimed in any one of Claims 1 to 12.

14. An identity document as claimed in Claim 13 when enclosed between an opposed pair of sheets of a transparent plastics material.

15. Identity documents substantially as hereinbefore described with reference to either of Figures 2 and 3.

THOMAS DE LA RUE & COMPANY
LIMITED.
SALLY A. FIELD,
Secretary.

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PROVISIONAL SPECIFICATION

2 SHEETS

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the Original on a reduced scale

Sheet 1

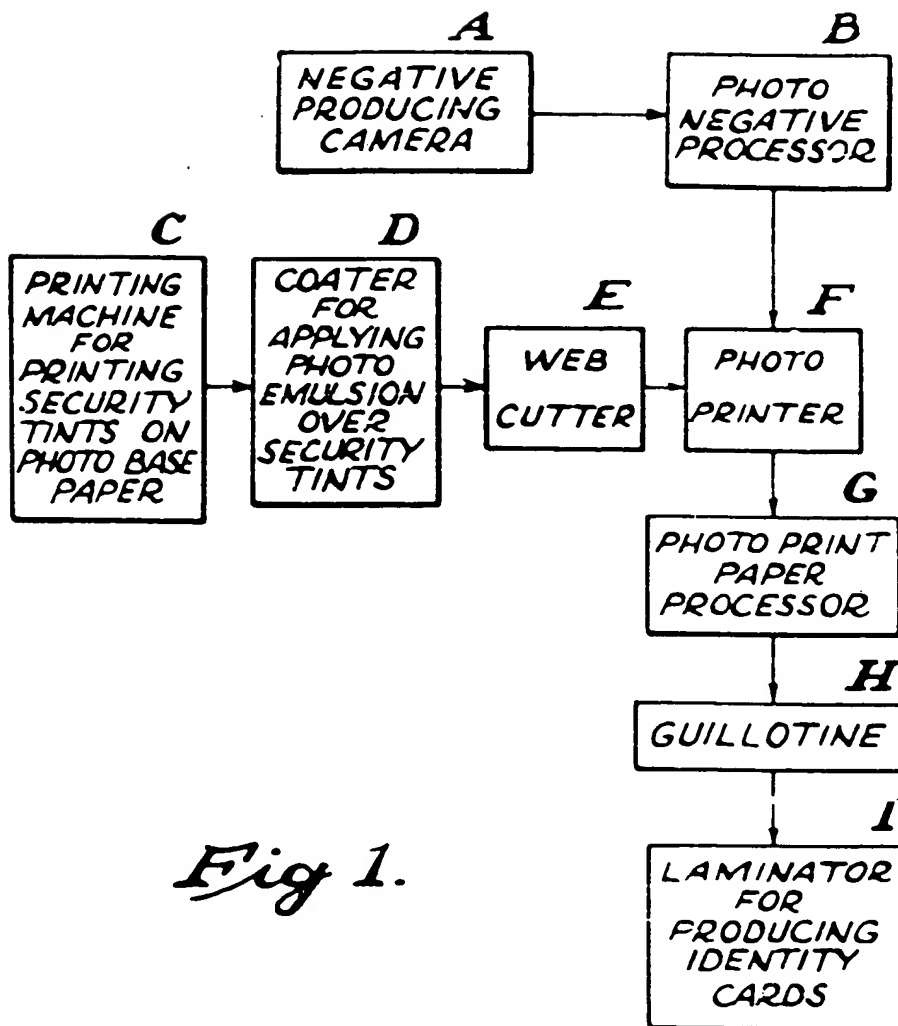


Fig 1.

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PROVISICNAL SPECIFICATION

2 SHEETS

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Sheet 2

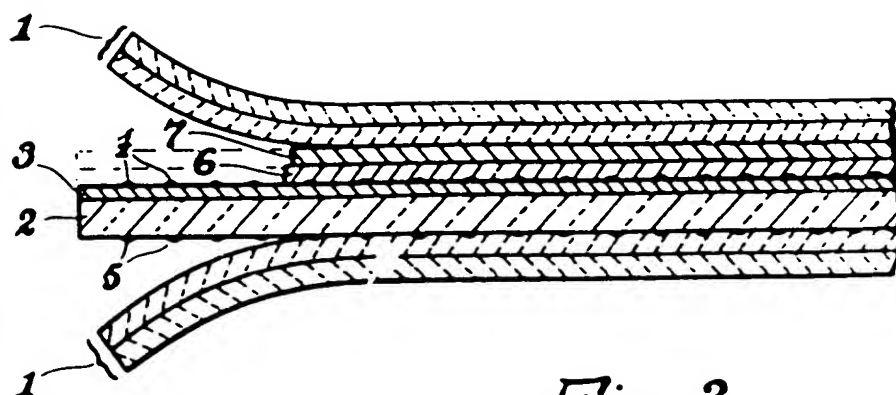


Fig 2.

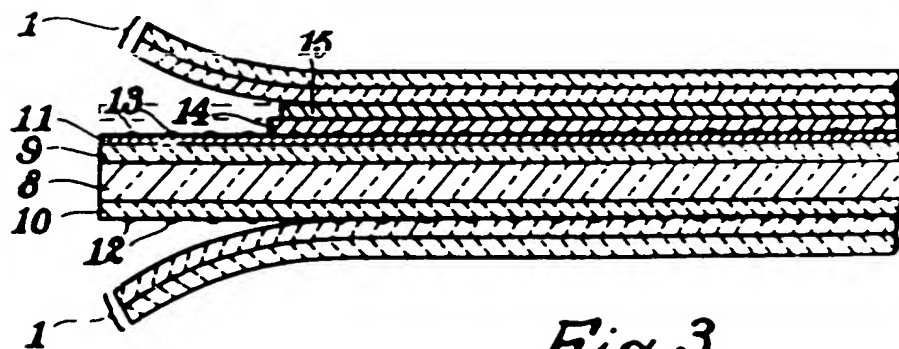


Fig 3.

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